

What is claimed is:

1. A display driver which drives a plurality of data lines of an electro-optical device which includes a plurality of scan lines, the data lines, a switching element
5 connected with one of the scan lines and one of the data lines and a pixel electrode connected with the switching element, the data lines including data line groups alternately distributed from two opposite sides toward inside of the electro-optical device in a shape of comb teeth, each of the data line groups consisting of a predetermined number of the data lines, and the display driver comprising:

10 a gray-scale bus to which gray-scale data is supplied corresponding to an arrangement order of each of the data lines;

first and second clock lines to which a first or second shift clock is supplied;

a first shift register which includes a plurality of flip-flops, shifts a first shift start signal in a first shift direction based on the first or second shift clock on the first clock line,
15 and outputs shift output from each of the flip-flops;

a second shift register which includes a plurality of flip-flops, shifts a second shift start signal in a second shift direction opposite to the first shift direction based on the first or second shift clock on the second clock line, and outputs shift output from each of the flip-flops;

20 a first data latch which includes a plurality of flip-flops, each of which holds the gray-scale data corresponding to one of the data lines based on the shift output of the first shift register;

a second data latch which includes a plurality of flip-flops, each of which holds the gray-scale data corresponding to one of the data lines based on the shift output of the
25 second shift register;

a data line driver circuit including a plurality of data output sections, each of the data output sections driving one of the data lines based on the gray-scale data held in one

of the flip-flops of the first or second data latch and being disposed corresponding to the arrangement order of the data lines, and

a clock switch circuit which outputs one of the first and second shift clocks to the first clock line and outputs the other of the first and second shift clocks to the second
5 clock line based on a mode setting signal.

2. The display driver as defined in claim 1,

wherein the data line driver circuit drives the data lines from a first side of the electro-optical device based on data held in the flip-flops of the first data latch, and drives
10 the data lines from a second side of the electro-optical device which faces the first side based on data held in the flip-flops of the second data latch.

3. The display driver as defined in claim 1,

wherein the clock switch circuit outputs a first reference shift clock to the first
15 clock line as the first shift clock and outputs a second reference shift clock to the second clock line as the second shift clock when the mode setting signal is at a first level, and outputs the second reference shift clock to the first clock line as the first shift clock and outputs the first reference shift clock to the second clock line as the second shift clock when the mode setting signal is at a second level.

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4. The display driver as defined in claim 2,

wherein the clock switch circuit outputs a first reference shift clock to the first clock line as the first shift clock and outputs a second reference shift clock to the second clock line as the second shift clock when the mode setting signal is at a first level, and
25 outputs the second reference shift clock to the first clock line as the first shift clock and outputs the first reference shift clock to the second clock line as the second shift clock when the mode setting signal is at a second level.

5. The display driver as defined in claim 3, comprising:

a shift clock generation circuit which generates the first and second reference shift clocks based on a reference clock,

5 wherein a shift operation period by each of the first and second shift registers includes a period in which phases of the first and second reference shift clocks are reversed.

6. The display driver as defined in claim 4, comprising:

10 a shift clock generation circuit which generates the first and second reference shift clocks based on a reference clock,

wherein a shift operation period by each of the first and second shift registers includes a period in which phases of the first and second reference shift clocks are reversed.

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7. The display driver as defined in claim 5,

wherein the first and second shift start signals are signals having the same phase, and

20 wherein the shift clock generation circuit generates the second reference shift clock by dividing frequency of the reference clock, and generates the first reference shift clock which has a pulse in a first-stage capture period for capturing the first shift start signal into the first shift register and has a phase which is a reverse of a phase of the second reference shift clock in a data capture period after the first-stage capture period has elapsed.

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8. The display driver as defined in claim 6,

wherein the first and second shift start signals are signals having the same phase,

and

wherein the shift clock generation circuit generates the second reference shift clock by dividing frequency of the reference clock, and generates the first reference shift clock which has a pulse in a first-stage capture period for capturing the first shift start
5 signal into the first shift register and has a phase which is a reverse of a phase of the second reference shift clock in a data capture period after the first-stage capture period has elapsed.

9. The display driver as defined in claim 2,

10 wherein a direction from the first side to the second side in which the data lines extend is the same as the first or second shift direction.

10. The display driver as defined in claim 1,

wherein, when the scan lines extend along a long side of the electro-optical device
15 and the data lines extend along a short side of the electro-optical device, the display driver is disposed along the short side.

11. The display driver as defined in claim 2,

wherein, when the scan lines extend along a long side of the electro-optical device
20 and the data lines extend along a short side of the electro-optical device, the display driver is disposed along the short side.

12. The display driver as defined in claim 3,

wherein, when the scan lines extend along a long side of the electro-optical device
25 and the data lines extend along a short side of the electro-optical device, the display driver is disposed along the short side.

13. The display driver as defined in claim 4,
wherein, when the scan lines extend along a long side of the electro-optical device
and the data lines extend along a short side of the electro-optical device, the display driver
is disposed along the short side.

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14. The display driver as defined in claim 5,
wherein, when the scan lines extend along a long side of the electro-optical device
and the data lines extend along a short side of the electro-optical device, the display driver
is disposed along the short side.

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15. The display driver as defined in claim 6,
wherein, when the scan lines extend along a long side of the electro-optical device
and the data lines extend along a short side of the electro-optical device, the display driver
is disposed along the short side.

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16. The display driver as defined in claim 7,
wherein, when the scan lines extend along a long side of the electro-optical device
and the data lines extend along a short side of the electro-optical device, the display driver
is disposed along the short side.

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17. The display driver as defined in claim 8,
wherein, when the scan lines extend along a long side of the electro-optical device
and the data lines extend along a short side of the electro-optical device, the display driver
is disposed along the short side.

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18. The display driver as defined in claim 9,
wherein, when the scan lines extend along a long side of the electro-optical device

and the data lines extend along a short side of the electro-optical device, the display driver is disposed along the short side.

19. An electro-optical device comprising:

5 a plurality of scan lines;

a plurality of data lines which includes data line groups alternately distributed from two opposite sides toward inside of the electro-optical device in a shape of comb teeth, each of the data line groups consisting of a predetermined number of the data lines;

a switching element connected with one of the scan lines and one of the data lines;

10 and

a pixel electrode connected with the switching element;

the display driver as defined in claim 1 which drives the data lines; and

a scan driver which scans the scan lines.

15 20. An electro-optical device comprising:

a display panel which has first and second sides facing each other and includes a plurality of scan lines, a plurality of data lines which includes data line groups alternately distributed from the first and second sides toward inside of the electro-optical device in a shape of comb teeth, a switching element connected with one of the scan lines and one of

20 the data lines, and a pixel electrode connected with the switching element, each of the data line groups consisting of a predetermined number of the data lines;

the display driver as defined in claim 1 which drives the data lines; and

a scan driver which scans the scan lines.